fw

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,647	09/10/2003	Mark Yarkosky	2052	3662

28005 7590 04/07/2006

SPRINT
6391 SPRINT PARKWAY
KSOPHT0101-Z2100
OVERLAND PARK, KS 66251-2100

EXAMINER	
AJIBADE AKONAI, OLUMIDE	
ART UNIT	**PAPER NUMBER**
2617	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/659,647	YARKOSKY, MARK
	Examiner	Art Unit
	Olumide T. Ajibade-Akonai	2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7,9-12,14-24 and 26-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7,9-12,14-24 and 26-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 22, 2006 has been entered.

Response to Arguments

3. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 7, 9, 12, 16, 17, 23, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)**.

Regarding **claim 1**, Dietz discloses in a cellular network in which a mobile station communicates with base stations through a wireless repeater, a method comprising; causing an antenna (antenna 25, see fig. 1, col. 2, lines 7-11) of the wireless repeater (mounted transmission repeater 60, see fig. 1, col. 2, lines 7-11, col. 5, line 43) to receive wireless signals from a plurality of base stations (inherent, since the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, indicating that it has received signals from the base stations of the cells, see fig. 3, col. 5, lines 40-53); determining a signal-to-noise ratio of each wireless signal (the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, see fig. 3, col. 5, lines 40-53); and based on the signal-to-noise ratio, the wireless repeater repeating the wireless signals (the repeater 60 will handoff to a cell based on the signal strength or signal to noise ratio, see fig. 3, col. 5, lines 40-53).

Dietz fails to disclose wherein the antenna sweeps over a coverage area through increments and receiving wireless signals at increments.

In the same field of endeavor, Chen discloses an antenna (directional antenna 104, see fig. 1, col. 5, lines 66-67, col. 6, line 1) that antenna sweeps over a coverage area through increments (the antenna sweeps from sector boundary 112b to 112a, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16) and receives signals at

increments (as the antenna 104, sweeps through the sector area, it transmits and receives signals, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen with Dietz for the benefit of reduce the transmit power of mobile stations.

Regarding **claim 7**, Dietz discloses a method for dynamically directing a wireless repeater, the method comprising; causing an antenna (antenna 25, see fig. 1, col. 2, lines 7-11) of the wireless repeater (mounted transmission repeater 60, see fig. 1, col. 2, lines 7-11, col. 5, line 43) to receive wireless signals from a plurality of base stations (inherent, since the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, indicating that it has received signals from the base stations of the cells, see fig. 3, col. 5, lines 40-53); determining a carrier-to-cochannel interference ratio of each wireless signal (the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, see fig. 3, col. 5, lines 40-53); and based on the carrier-to-cochannel interference ratio, the wireless repeater repeating the wireless signals (the repeater 60 will handoff to a cell based on the signal strength, and it is well known that signal attributes can also include the cochannel interference caused between two cells transmitting on the same frequency within a network, see fig. 3, col. 5, lines 40-53).

Dietz fails to disclose wherein the antenna sweeps over a coverage area through increments and receiving wireless signals at increments.

In the same field of endeavor, Chen discloses an antenna (directional antenna 104, see fig. 1, col. 5, lines 66-67, col. 6, line 1) that antenna sweeps over a coverage area through increments (the antenna sweeps from sector boundary 112b to 112a, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16) and receives signals at increments (as the antenna 104, sweeps through the sector area, it transmits and receives signals, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen with Dietz for the benefit of reduce the transmit power of mobile stations.

Regarding **claim 9**, as applied to claim 7, Dietz discloses the claimed invention except further comprising incrementally receiving the wireless signals from a plurality of directional antennas, where each directional antenna is operable to receive wireless signals from a given coverage area.

Chen, however, teaches further comprising incrementally receiving the wireless signals from a plurality of directional antennas (base station 102 with directional antenna 104 receives signals from subscriber stations 108a and 108b as signal beam 110 sweeps from sector 112a to sector 112b, see figs. 1 and 6, col. 5, lines 64-67, col. 6, lines 1-16), where each directional antenna (antenna 620, see fig. 6, col. 17, lines 21-25) is operable to receive wireless signals from a given coverage area (active subscribers in the coverage area receive signals from the directional antenna of the bas station, see col. 6, lines 5-7).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz and Chen for the benefit of preventing interference to subscriber stations neighboring cells.

Regarding **claim 12**, as applied to claim 7, Dietz et al further discloses wherein directing the wireless repeater to radiate amplified wireless signals in a direction of a given base station comprises directing the wireless repeater to radiate the amplified wireless signals (cell phone signals are boosted trough the automobile repeater, see col. 4, lines 46-55) in a direction corresponding to a strongest carrier-to-cochannel interference ratio (repeaters select best cell phone to cell tower path based on the best signal-to-noise ratio, see col. 5, lines 40-53).

Regarding **claim 16**, Dietz discloses a wireless repeater (mounted transmission repeater 60, see fig. 1, col. 2, lines 7-11, col. 5, line 43) operable to radiate in a number of directions so as to provide a number of coverage areas (path 52 or 53, see fig. 3, col. 5, lines 40-44), and whereby the wireless repeater receives wireless signals from a plurality of base stations (inherent, since the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, indicating that it has received signals from the base stations of the cells, see fig. 3, col. 5, lines 40-53).

Dietz fails to disclose incrementally adjusting the wireless repeater to receive wireless signals from a number of coverage areas.

In the same field of endeavor, Chen teaches incrementally adjusting the antenna (directional antenna 104, see fig. 1, col. 5, lines 66-67, col. 6, line 1) of a base station to receive wireless signals from a number of coverage areas (the antenna

sweeps from sector boundary 112b to 112a, and as the antenna 104, sweeps through the sector area, it transmits and receives signals, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen with Dietz for the benefit of reduce the transmit power of mobile stations.

Regarding **claim 17**, as applied to claim 1, Dietz et al discloses the claimed invention except wherein incrementally adjusting the wireless repeater comprises directing a phased array antenna to sweep its coverage area over the number of coverage areas.

Chen, however, further discloses wherein incrementally adjusting the wireless repeater comprises directing a phased array antenna (signal beam shaping means 330 comprises a plurality of phase shifters 310 connected to an antenna 312, see fig. 3A, col. 11, lines 37-43) to sweep its coverage area over the number of coverage areas.

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz and Chen for the benefit of preventing interference to subscriber stations neighboring cells.

Regarding **claim 23**, Dietz discloses a repeater (mounted transmission repeater 60, see fig. 1, col. 2, lines 7-11, col. 5, line 43) comprising a donor antenna (antenna 25, see fig. 1, col. 2, lines 7-11) that is operable to receive wireless signals over a plurality of base stations (inherent, since the repeater 60 uses the signal attributes of the cells 44

and 47 to determine which of the cells to handoff to, indicating that it has received signals from the base stations of the cells, see fig. 3, col. 5, lines 40-53), and a mobile station modem that receives signals from the donor antenna and identifies the characteristics of the wireless signals received (inherent, since the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, indicating that it has at least a modem facility for to identify signal attributes such as the signal-to-noise ratio of received signals from the base stations of the cells, see fig. 3, col. 5, lines 40-53); determining a signal-to-noise ratio of each wireless signal (the repeater 60 uses the signal attributes of the cells 44 and 47, see fig. 3, col. 5, lines 40-53); and a processor operable to record in data storage the wireless signals received (inherent, since it is well known that a processor comprising a computer readable program in a memory device is required to execute the task of receiving signals from the cells 44 and 47 and comparing their signal to noise ratios, see col. 5, lines 40-53) and, based on the characteristics, to direct the donor antenna to radiate amplified wireless signals (the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, see fig. 3, col. 5, lines 40-53).

Dietz fails to disclose wherein the antenna sweeps over a coverage area through increments and receiving wireless signals at increments.

In the same field of endeavor, Chen discloses an antenna (directional antenna 104, see fig. 1, col. 5, lines 66-67, col. 6, line 1) that antenna sweeps over a coverage area through increments (the antenna sweeps from sector boundary 112b to 112a, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16) and receives signals at

increments (as the antenna 104, sweeps through the sector area, it transmits and receives signals, see fig. 1, col. 5, lines 64-67 and col. 6, lines 1-16).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Chen with Dietz for the benefit of reduce the transmit power of mobile stations.

Regarding **claim 30**, as applied to claim 23, the combination of Dietz and Chen discloses the claimed invention.

Dietz fails to disclose wherein the donor antenna is an antenna selected from the group consisting of an omni-directional antenna, a directional antenna, and a phased array antenna.

Chen, however, further discloses wherein the donor antenna is an antenna selected from the group consisting of an omni-directional antenna, a directional antenna, and a phased array antenna (base station signal beams are created using mechanically steered directional antennas, see fig. 1a, col. 4, lines 14-21).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz and Chen for the benefit of preventing interference to subscriber stations neighboring cells.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)** as applied to claim 16 above, and further in view of **Song et al (20040146013)**.

Regarding **claim 18**, as applied to claim 16, the combination of Dietz, Chen and Song et al disclose the claimed invention except wherein incrementally adjusting the wireless repeater comprises rotating a directional antenna to sweep its coverage area over the number of coverage areas.

Song et al, however, discloses wherein incrementally adjusting the wireless repeater comprises rotating a directional antenna to sweep its coverage area over the number of coverage areas (repeater 1030 comprises two directional antennas pointing towards access point and station 1050 in coverage area 1040, the repeater extending coverage area 1020 into coverage area 1040, see p. 6, [0062]).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz et al and Song et al for the benefit of extending the coverage area in a wireless communication system.

Regarding **claim 19**, as applied to claim 16, the combination of Dietz, Chen and Song et al disclose the claimed invention.

Dietz and Chen fail to disclose wherein the wireless repeater includes a plurality of antennas each operable to receive wireless signals from a given coverage area, and wherein incrementally adjusting the wireless repeater comprises selecting antennas from the plurality of antennas to receive the wireless signals.

Song et al, however, discloses wherein the wireless repeater includes a plurality of antennas (repeater 1030 includes two directional antennas, see fig. 10, p. 6, [0062]) each operable to receive wireless signals from a given coverage area (repeater 1030 with two directional antennas pointing at the access point and station 1050, see frig. 10, p. 6, [0062]), and wherein incrementally adjusting the wireless repeater comprises selecting antennas from the plurality of antennas to receive the wireless signals (repeater 130 receives up-link data from station 1050 via a first directional antenna, see p. 7, [0062]).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz, Chen and Song et al for the benefit of extending the coverage area in a wireless communication system.

8. Claims 10 and 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)** as applied to claims 7 and 16 above, and further in view of **Lehmusto et al (5,907,794)**.

Regarding **claim 10**, as applied to claim 7, Dietz, as modified by Chen discloses the claimed invention except further comprising for each of the received wireless signals, storing in data storage a coverage area identifier corresponding to a coverage area from which the wireless signals were received.

In the same field of endeavor, Lehmusto et al discloses further comprising for each of the received wireless signals, storing in data storage (database maintained at the repeater, see col. 3, lines 24-32) a coverage area identifier subscriber stations

corresponding to a coverage area from which the wireless signals were received (identifiers of the subscriber stations which operate on mode channels within the coverage area of the repeater are stored in the database, see col. 3, lines 24-32).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Lehmusto et al into the system of Dietz and Chen for the benefit of maintaining the information of subscribers in the coverage area in the repeater station.

Regarding **claim 20**, as applied to claim 16, Dietz, as modified by Chen discloses the claimed invention except further comprising for each of the wireless signals, storing in data storage a coverage area identifier corresponding to a coverage area from which the wireless signals were received.

In the same field of Lehmusto et al discloses further comprising for each of the wireless signals (direct mode channels, see col. 3, lines 24-28), storing in data storage (database maintained at the repeater, see col. 3, lines 24-32) a coverage area identifier corresponding to a coverage area from which the wireless signals were received (identifiers of the subscriber stations which operate on mode channels within the coverage area of the repeater are stored in the database, see col. 3, lines 24-32).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Lehmusto into the system of Dietz and Chen for the benefit of controlling a subscriber station operating on a direct mode channel in a radio system.

9. Claims 11, 14, 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al**

6,782,277 (hereinafter Chen) as applied to claim 7 above, and further in view of **Kuwahara et al (20030162550)**.

Regarding **claim 11**, as applied to claim 7, Dietz, as modified by Chen discloses the claimed invention except further comprising determining a PN-offset of each received wireless signal.

In the same field of endeavor, Kuwahara et al discloses further comprising determining a PN-offset of each received wireless signal (base station **0** is a repeater that transmits pilot signals to the mobile terminal with a predetermined pilot PN offset, see p. 6, [0068]-[0069]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kuwahara et al into the system of Dietz and Chen for the benefit of providing a means for a wireless communications terminal to detect repeaters.

Regarding **claim 14**, as applied to claim 7, the combination of Dietz, Chen and Kuwahara disclose the claimed invention.

Dietz and Chen fail to disclose further comprising radiating the amplified signals in a direction of a given sector of the given base station.

Kuwahara et al, however, discloses further comprising radiating the amplified signals in a direction of a given sector of the given base station (the repeater repeats signals in one sector of a base station, see p. 6, [0065]-[0066]).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz, Chen, and Kuwahara for the benefit of

determining whether a repeater or base station from which the terminal receives signals by observing the number of sectors it receives.

Regarding **claim 15**, as applied to claim 14, the combination of Dietz, Chen and Kuwahara et al disclose the claimed invention.

Dietz and Chen fail to disclose further comprising only repeating signals having a PN-offset of the given sector.

Kuwahara et al, however, discloses further comprising only repeating signals having a PN-offset of the given sector (if base station transmitting PN offset signals is the one from which the terminal received the sync channel, and the terminal can observe only the sector of the channel, then the transmitting station is a repeater, see p. 5-6, [0061]-[0062]).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz, Chen and Kuwahara et al for the benefit of detecting a signal from a repeater.

Regarding **claim 24**, as applied to claim 23, the combination of Dietz, Chen, disclose the claimed invention.

Dietz and Chen fail to disclose wherein the characteristics are selected from the group consisting of PN-offsets of the wireless signals and signal to noise ratios Ec/1o for each PN offset.

In the same field of endeavor, Kuwahara et al discloses wherein the characteristics are selected from the group consisting of PN-offsets of the wireless signals (base station **0** is a repeater that transmits pilot signals to the mobile terminal

with a predetermined pilot PN offset, see p. 6, [0068]-[0069]) and signal to noise ratios Ec/1o for each PN offset.

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz, Chen, and Kuwahara for the benefit of determining whether a repeater or base station from which the terminal receives signals by observing the number of sectors it receives.

10. Claims 26 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)** as applied to claim 23 above, and further in view of **Kita (5,534,872)**.

Regarding **claim 26**, as applied to claim 25, the combination of Dietz and Chen discloses the claimed invention except wherein at each increment, the donor antenna receives wireless signals and passes the wireless signals to the processor which records in the data storage the increment at which each wireless signal was received.

Kita, however, teaches wherein at each increment (distance measurement in correspondence with every ten degrees with respect to one rotation angle, see col. 4, lines 64-67), the donor antenna (antenna 1, see fig. 1, col. 3, line 57) receives wireless signals (electromagnetic waves received by antenna 1 when the antenna has been rotated by an angle, see col. 5, lines 34-42) and passes the wireless signals to the processor which records in the data storage (memory circuit 16, see fig. 1, col. 4, line 56) the increment at which each wireless signal was received (angle data is stored in memory circuit 16, and the angle data is derived from the rotation of the antenna to

receive radio signals reflected from a target, see abstract, col. 4, lines 4-11 and lines 58-63).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kita into the system of Dietz and Chen for the benefit of measuring the distance for transmitting a radio signal every time the antenna is rotated by a rotation angle.

Regarding **claim 31**, as applied to claim 23, the combination of Dietz and Chen disclose the claimed invention. In addition, Dietz et al, further discloses based on the characteristics (inherent, since the repeater 60 uses the signal attributes of the cells 44 and 47 to determine which of the cells to handoff to, indicating that it has at least a modem facility for to identify signal attributes such as the signal-to-noise ratio of received signals from the base stations of the cells, see fig. 3, col. 5, lines 40-53) of the wireless signals directing the phased array antenna to radiate the amplified wireless signals at a given phase (repeaters select best cell phone to cell tower path based on the best signal-to-noise ratio, see col. 5, lines 40-53).

Dietz fails to disclose wherein the donor antenna is a phased array antenna.

Chen, however further discloses wherein the donor antenna is a phased array antenna (signal beam shaping means 330 comprises a plurality of phase shifters 310 connected to an antenna 312, see fig. 3A, col. 11, lines 37-43).

It would therefore have been obvious to one of ordinary skill in the art to further modify the combination of Dietz and Chen for the benefit of preventing interference to subscriber stations neighboring cells.

The combination of Dietz and Chen fails to disclose wherein the processor records the phase of the phased array antenna at which each wireless signal is received.

Kita, however, teaches wherein the processor (memory address control circuit 6, see fig. 1, col. 4, lines 10-12) records the phase of the phased array antenna at which each wireless signal is received (angle data is stored in memory circuit 16, and the angle data is derived from the rotation of the antenna to receive radio signals reflected from a target, see abstract, col. 4, lines 4-11 and lines 58-63).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kita into the system of Dietz and Chen for the benefit of measuring the distance for transmitting a radio signal every time the antenna is rotated by a rotation angle.

11. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)** and **Lehmusto et al (5,907,794)** as applied to claim 20 above, and further in view of **Kuwahara et al (20030162550)**.

Regarding **claim 21**, as applied to claim 20, the combination of Dietz, Chen, Lehmusto et al disclose the claimed invention except wherein determining characteristics of the wireless signals comprises determining characteristics selected

from the group consisting of a PN-offset of each wireless signal and a signal-to-noise ratio for each PN-offset.

In the same field of endeavor Kuwahara et al discloses wherein determining characteristics of the wireless signals comprises determining characteristics selected from the group consisting of a PN-offset of each wireless signal (base station **0** is a repeater that transmits pilot signals to the mobile terminal with a predetermined pilot PN offset, see p. 6, [0068]-[0069]) and a signal-to-noise ratio for each PN-offset.

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Kuwahara et al into the system of Dietz, Chen and Lehmusto et al for the benefit of providing a means for a wireless communications terminal to detect repeaters.

Regarding **claim 22**, as applied to claim 21, Dietz discloses wherein directing the wireless repeater comprises directing the wireless repeater to radiate the amplified wireless (cell phone signals are boosted trough the automobile repeater, see col. 4, lines 46-55) signals to a given coverage area having a coverage area identifier corresponding to a coverage area having the highest signal-to-noise ratio (repeaters select best cell phone to cell tower path based on the best signal-to-noise ratio, see col. 5, lines 40-53).

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)** and **Kita (5,534,872)**. as applied to claim 26 above, and further in view of **Wang et al (6,799024)**.

Regarding **claim 27**, as applied to claim 26, the combination of Dietz, Chen, and Kita disclose the claimed invention except wherein the mobile station modem is a rake receiver that identifies the PN-offset in the wireless signals.

In the same field of endeavor, Wang et al teaches wherein the mobile station modem is a rake receiver (RAKE receiver, see col. 4, line 41) that identifies the PN-offset in the wireless signals (information bearing signal comprises a spreading code with a pseudo-random noise sequence that is identifiable by a rake receiver, see col. 4, lines 33-42).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Wang et al into the system of Dietz, Chen, and Kita for the benefit of demodulating coded signals from the mobile station.

13. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dietz et al 7,003,261 (hereinafter Dietz)** in view of **Chen et al 6,782,277 (hereinafter Chen)** and **Kita (5,534,872)** and **Wang et al (6,799024)** claim 27 above, and further in view of **Tak et al (6,567,460)**.

Regarding **claim 28**, as applied to claim 27, the combination of Dietz, Chen, Kita, and Wang et al disclose the claimed invention except wherein the processor records in the data storage the PN offsets and the signal to noise ratios of the wireless signals at each increment.

In the same field of endeavor, Tak et al teaches wherein the processor (controlling part 260, see fig. 2, col. 5, line 23) records in the data storage (storage area, see col. 5, line 28) the PN offsets (pilot PN offset, see col. 5, lines 33-35) and the signal

to noise ratios of the wireless signals at each increment (database stores the PN offset and power information, see col. 5, lines 25-29).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Tak et al into the system of Dietz, Chen, Kita, and Wang et al for the benefit of detecting the pilot PN offsets in a telephone system.

Regarding **claim 29**, as applied to claim 28, the combination of Dietz et al, however, inherently teaches wherein the processor instructs the donor antenna (inherent, since it is well known that a processor comprising a computer readable program in a memory device is required to execute the task of receiving signals from the cells 44 and 47 and comparing their signal to noise ratios, and to enable repeater 36 with transmission antennae 24 and 25 seek to be connected to a base tower, see fig. 1, col. 4, lines 7-15, col. 5, lines 53,) to radiate the amplified wireless signals to a base station (the automobile repeaters boost cell phone signals, and transmits the signal to a base station, see p. 3, [0020], [0027]) that corresponds to an increment where the mobile station modem detected a highest signal-to-noise ratio (repeaters select best cell phone to cell tower path based on the best signal-to-noise ratio, see col. 5, lines 40-53).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cook et al (6,005,884) discloses a distributed architecture for a wireless data communications system.

Morimoto (6,778,809) discloses a mobile network for remote service areas using mobile stations.

Farley et al (6,816,732) discloses an optimal load-based wireless session context transfer.

Han et al (20030143948 discloses an apparatus for detecting base station direction in RF repeater.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olumide T. Ajibade-Akonai whose telephone number is 571-272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

OA

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER